

REMARKS

Applicants request favorable reconsideration and allowance of this application in view of the foregoing amendments and the following remarks.

Claims 1, 4, 5, 12, 15, 16, and 23-28 are pending in the application, and claims 1, 12, 23, 24, 25, 26, 27, and 28 are independent.

By this Amendment, claims 8-11, 19-22, 29, and 30 have been cancelled without prejudice, and claims 1, 4, 5, 12, 15, and 23-28 have been amended. Support for these amendments can be found in the original specification, as filed. No new matter has been added.

In formal matters, the Office Action objected to claims 1, 19-21, and 23-28 because of informalities. Moreover, claims 19-21 and 26-28 were rejected under 35 U.S.C. § 112 as being indefinite because of the noted informalities. By this amendment, claims 1 and 23-28 have been amended with particular attention to the Examiner's objections. In addition, claims 19-21 have been canceled herein without prejudice or disclaimer. Accordingly, Applicants request reconsideration and withdrawal of the outstanding objections and corresponding rejection.

The Office Action also notes that should claims 1 or 25 be found allowable, claims 29 and 30, respectively, will be objected to under 37 C.F.R. § 1.75 as being substantial duplicates. Claims 29 and 30 have been canceled herein.

Turning now to the art rejections, the Office Action rejects claims 1, 4, 5, 10, 12, 15, 16, 21, and 23-30 under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,266,442 to Laumeyer et al. In addition, claims 8, 9, 19, and 20 stand rejected under 35 U.S.C. § 103 as unpatentable over Laumeyer et al. in view of U.S. Patent No. 6,587,601 to Hsu et al., and claims 11 and 22 stand rejected under 35 U.S.C. § 103 as being unpatentable

over Laumeyer et al. in view of EP Patent Application No. 0 977 014 A2 to Miwa et al. Applicants traverse these rejections.

With respect to one aspect of the present invention, independent claim 1 recites an image processing apparatus featuring holding means, extraction means, deletion means, and associating means. The holding means holds plural pieces of frame data constituting a moving image captured using a capture device mounted on a moving object, associated with position data obtained based on GPS, that indicate a position at which each piece of frame data is captured. The extraction means extracts successive frame data whose position data nearly matches, from the plural pieces of frame data held by the holding means. The deletion means deletes all frame data of the extracted successive frame data except for one frame data. The associating means associates the frame data that has not been deleted by said deletion means with a position on a map based on the position data of the frame data.

With respect to another aspect of the invention, independent claim 25 recites an image processing apparatus featuring holding means, determination means, extraction means, deletion means, and storage means. The holding means holds plural pieces of frame data constituting a moving image, obtained from image data input while visiting a plurality of positions. The determination means compares two pieces of successive frame data and determines whether the two pieces of successive frame data have been captured at a same position. The extraction means extracts frame data determined by the determination means to have been captured at the same position from the plural pieces of frame data held by the holding means. The deletion means deletes frame data overlapping another piece of frame data extracted by the extraction means. The storage means stores, after associating with a position on a map, frame data remaining after a deleting process performed by the deletion means. The determination means computes least squares error between two pieces

of successive frame data, and determines that the two pieces of successive frame data match each other when the computed least squares error is equal to or smaller than a predetermined value.

Independent claims 12 (directed to an image processing method), 23 (directed to a computer-executable program), and 24 (directed to a storage medium storing a computer-executable program) generally relate to claim 1. Independent claims 26 (directed to an image processing method), 27 (directed to a computer-executable program), and 28 (directed to a storage medium storing a computer-executable program) generally relate to claim 25.

Accordingly, in independent claims 1, 12, 23, and 24, among other features, successive frame data whose position data nearly matches is extracted from plural pieces of frame data and all frame data of the extracted successive frame data except for one frame data is deleted. And, in independent claims 25, 26, 27, and 28, among other features, two pieces of successive frame data are compared, it is determined whether the two pieces of successive frame data have been captured at a same position, frame data determined to have been captured at the same position are extracted, and frame data overlapping another piece of the extracted frame data are deleted.

As an exemplary application, the claimed invention is useful in instances in which there is a possibility that a plurality of frame data are captured at substantially the same position, but only a single piece of frame data for a given position is desired or necessary.

Laumeyer et al. relates to a method and an apparatus for identifying objects depicted in a videostream acquired using cameras mounted on a vehicle. That patent also describes that the method/apparatus discriminates, for example, signs within the acquired images. Further, Laumeyer et al. is understood to teach that, when reprocessing an image

frame, an image portion where a sign has been detected is removed for later processing. However, Applicants do not understand Laumeyer et al. to teach or suggest extracting successive frame data whose position data nearly matches, and deleting all frame data of the extracted successive frame data except for one frame data, as recited in independent claims 1, 12, 23, and 24. Laumeyer et al. is also not understood to teach or suggest comparing two pieces of successive frame data, determining whether the two pieces of successive frame data have been captured at a same position, extracting frame data determined to have been captured at the same position, and deleting frame data overlapping another piece of the extracted frame data, as recited in independent claims 25, 26, 27, and 28.

The Office Action cites Hsu et al. for teaching computing the least squares error between two pieces of frame data. Miwa et al. is understood to be cited for teaching determining a number of frames between two points. Applicants submit that neither of these references remedies the deficiencies of Laumeyer et al., discussed above.


For the foregoing reasons, Applicants submit that independent claims 1, 12, 23, 24, 25, 26, 27, and 28 are allowable over the cited art, whether that art is taken alone, or in combination. Favorable consideration and withdrawal of the rejections to those claims are requested.

The remaining claims depend from one of the independent claims. Applicants submit that these dependent claims are allowable by virtue of their dependency, and for reciting other patentable features of the invention. Favorable and independent consideration of the dependent claims are requested.

Applicants submit that this application is in order for allowance. Favorable reconsideration and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our below-listed address.

Respectfully submitted,



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